

# P2 Internship 2010

## High Liner Foods

### *James Folan - Water Recycling and Waste Reduction*

James Folan spent his summer internship working with High Liner Foods Inc. to assist them in reducing their water consumption, energy use and waste generation.

High Liner Foods (USA) Inc. (HLF) is one of North America's largest processors and marketers of seafood products. The company is constantly looking for ways to improve its operations through sustainable practices. James observed the Portsmouth facility's production processes and looked for ways to make them more efficient employing Pollution Prevention strategies.

The processing of cheese for mozzarella sticks involves the use of heated water to melt the cheese to the proper consistency. This process uses 25,000 gallons of water per day of operation and the "waste" water is sent to the sewer through a floor drain. James performed a cost analysis to determine the financial feasibility of installing a water recirculation unit. He determined that, with a purchase of a closed loop system, the return on investment will be less than two years. The estimated annual water, sewer and energy cost savings will be \$12,270.

James also developed a spreadsheet for employees to track and identify waste streams. A RFP was issued to recycling companies seeking contracts for the more than 5 tons of plastic waste HLF generates per month. Recommendations were made for future projects, such as a heat exchanger system to use the waste heat for operations within the facility.



## Freudenberg – NOK in Bristol

### *Paul Kyriacopoulos - Achieving Zero Landfill Status*

Freudenberg manufactures products for the automotive as well as other industries. Paul Kyriacopoulos' main project was to help the facility achieve Zero-Landfill Status by finding alternative solutions to disposal of pallets, waste rubber dust and borecoat filter blankets.

Paul examined the pallet recycling program to find a more cost effective and less labor intensive method. The pollution prevention strategy of sending the pallets back to the original owner for reuse was not possible. Three other options were investigated: 1) break the pallets down and send them to the Wheelabrator Waste-to Energy Plant in Concord. 2) burn the pallets and use the energy at the plant, or 3) set up a better system for storage and negotiate a better deal with another recycler.

A crusher to break down pallets was cost prohibitive and would require more labor. The wood burning system was cost effective, but would release carbon monoxide and put the company out of compliance with the state's air emission standards. Paul recommended building a loading dock and removing the

pallets via a drop trailer by a company that would pay more for the pallets, increasing the ease of operation and saving the company \$3700/yr.

The rubber dust waste from the rubber manufacturing was being disposed of twice a year in a solid waste landfill. A test performed by two different laboratories confirmed that the waste was non-hazardous and could be incinerated or mixed with other wastes. Paul presented the company with two options: remove the waste via a large container, mix with waste oils and send for incineration by Maine Energy of Biddeford, Maine; or bag and box the dust for incineration at the Wheelabrator Waste-to-Energy Plant in Concord. Cost would be a determining factor but, in either case, 230 fewer 55-gallon drums of waste rubber dust would not be sent to a solid waste landfill.

The last project involved eliminating paint filter blankets from the facility's parts spraying process. A pollution prevention analysis of the whole painting process determined it was not possible to eliminate the painting, so steps were taken to make it more efficient. "High volume low pressure" (HVL) spray guns and fan spray width adjustments (to avoid excess overspray) were successful in reducing the paint use from 8 gallons to just 0.5 gallons per day. The filter blankets were replaced with reusable stainless steel filters that are cleaned every four hours in a cleaning bath that will be used repeatedly and then managed as hazardous waste. With paint reduction and installation of re-usable filters, the company will save up to \$74,000/year.

### **Hitchiner Manufacturing Inc. – Milford**

#### *Alan Roth - Waste Heat Recovery and Energy Efficiency*

Hitchiner's Milford plant produces complex thin-wall investment castings and fully-finished casting-based subassemblies and components to industry. Alan Roth worked on three projects at this facility focusing on energy efficiency. Two of the projects involved recovering heat from steam generator's stack gases to preheat makeup water for the generators, and recovering heat from the furnace stack gases to preheat the incoming combustion air.

The estimated combined savings from these projects:

- 167,000 therms/yr (the equivalent of removing 835 metric tons of CO<sub>2</sub>/yr)
- \$173,000/yr

The other project involved replacement of the plant's main air compressor. Data loggers were installed to record the flow rate, power usage and pressure of the air at the end of the line to verify its inefficiency. The purchase of a highly efficient, properly sized compressor would save:

- 940,000 kWh/yr or the equivalent of removing 580.5 metric tons of CO<sub>2</sub> (based on the percentage of CO<sub>2</sub> emitting resources utilized by the power company to generate electricity).
- \$100,000 /yr

The payback period would be 6-8 months. Alan suggested contacting the facility's power companies for incentives to help defer the cost of implementing all of these projects.

## **New Hampshire Department of Environmental Services – Pollution Prevention Program**

### *Matthew Messina - Outreach and Education for Mercury Reduction*

Matthew Messina worked for the NHPPP assisting staff with site visits; outreach and education; case studies and calculations for ongoing projects.

In 2007, DES adopted Env-Ws 905 requiring all dental offices to certify their installation of an amalgam separator to collect mercury amalgam before it is discharged into the sewer. Although 99 percent of all New Hampshire dentists have self certified their compliance, DES had not yet been able to verify the installation or condition of the separators. Matt visited 86 random dental practitioners and was able to verify 100 percent compliance for those facilities. Some maintenance issues were observed and will be addressed with further outreach.

Matt also visited municipal transfer stations to determine compliance with the proper disposal of mercury containing products. Because consumer disposal represents a large potential source of mercury, RSA 149-M:58 bans the disposal of mercury-added products at any solid waste landfill, transfer station or incinerator and established four main requirements. Matt's visits to 34 random facilities indicate the following compliance rates.

1. 59 percent post a notice or sign at the facility indicating the prohibition against the disposal of mercury-added products.
2. 32 percent provide facility customers written notification describing the prohibition against the disposal of mercury-added products.
3. 97 percent accept and recycle mercury-added products, or provide facility customers with information on where they may take mercury-added products.
4. 100 percent implement an inspection procedure to detect the presence of illegally discarded mercury-added products.

Matt provided posters and handouts explaining the law and helped the operators understand their legal responsibilities.

Matt assisted the Small Business Technical Assistance Program with its auto body shop inspections to check for compliance with Air and Hazardous Waste Rules. He completed calculations and a case study on the NH Department of Administrative Services' reduction of the use hazardous chemicals by switching to greener cleaners. He also developed an energy reduction analysis and calculation of the total financial savings for High Liner Foods Inc.